

CLAIMS

1. A process for converting a copper sulphide matte to blister copper, wherein the process includes the steps of:

adding the copper sulphide matte and flux to a suitable agitated slag phase; and

injecting, from a discharge tip at the lower end of a top-submerged lance, an oxidizing gas suitable for reacting with the matte to produce blister copper which forms or adds to a continuous blister copper phase below the slag phase;

wherein the lance tip is located within the slag phase at a depth enabling the injected gas to agitate the slag phase, and to react with copper sulphide matte dispersed therein, while precluding a substantial proportion of the gas from contacting the continuous blister copper phase.

2. The process of claim 1, wherein the slag phase has a depth which enables agitation of the slag phase by the top submerged injection therein without a stream or jet of the injected gas passing through the lower surface of the slag phase.

3. The process of claim 2, wherein the slag phase has a depth of from about 500 mm up to about 2 m.

4. The process of claim 2, wherein the slag phase has a depth of from about 700 mm to about 1.7 m.

5. The process of any one of claims 1 to 4, wherein the injection is at a mid-region of the height of the slag phase.

6. The process of any one of claims 1 to 4, wherein the injection is near the upper surface of the slag phase.

7. The process of any one of claims 1 to 6, wherein the injection is directed downwardly and laterally outwardly for agitating substantially the entire slag phase for substantially uniform dispersal of the copper sulphide matte throughout the slag phase.

8. The process of any one of claims 1 to 7, wherein the slag phase comprises an iron based silicate slag.

9. The process of claim 8, wherein the iron based silicate slag is a ferrous calcium silicate (olivine) slag.

10. The process of claim 8, wherein the iron based silicate slag is an iron silicate (fayalite) slag.

11. The process of any one of claims 8 to 10, wherein the iron based silicate slag has a ratio of Fe to SiO₂ of from 1.14 to 2.11, a ratio of CaO to Fe of from 0.15 to 0.92, and a ratio of CaO to SiO₂ of from 0.22 to 1.11.
- 5 12. The process of claim 11, wherein the ratio of Fe to SiO₂ is from 1.14 to 1.55.
13. The process of any one of claims 1 to 12, wherein a reductant is added to the slag phase for reducing the formation of magnetite and thereby suppressing foaming of the slag phase.
- 10 14. The process of claim 13, wherein the reductant is lump coal.
15. The process of claim 8, wherein the iron based silicate slag is a lime modified iron silicate slag.